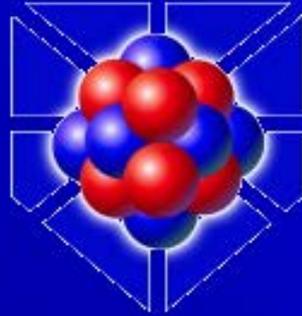


# NUCSAFE



Nucsafe<sup>®</sup> Capabilities  
in Support of Japan's Post  
Fukushima Programs  
April 2015

*Guardian<sup>®</sup> Radiation Monitoring Systems  
for the Measurement of  
Radiological and Nuclear Material*



**World Class Protection**



NUCSAFE

# Company Information

- ❖ Nucsafe – Founded 1999
  - ❖ Rapid Development Capability
  - ❖ Proven Manufacturing Capacity
  - ❖ ISO9001:2000, ISO14000, OHSAS 18001
  - ❖ Current system platforms
    - ❖ **Stationary**
      - ❖ Vehicle, container, freight, rail, pedestrian, conveyor
    - ❖ **Mobile**
      - ❖ Land, marine, aerial
    - ❖ **Portable**
      - ❖ Backpack, vest, briefcase, handheld
    - ❖ **X-ray backscatter**
      - ❖ Non-destructive testing, security



- ❖ Niki Glass – Founded 1923
  - ❖ Nucsafe distributor since 1999
  - ❖ Applied Radiation Measurements
  - ❖ Applied X-ray Measurements
  - ❖ Cryogenics and Superconducting Magnets
  - ❖ Cryobiology and Microscope Measurements





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# Stationary Radiation Portals for Vehicles & Containers

- ❖ **Security and Contamination Monitoring at Ports**
- ❖ Designs are modular to allow pedestrian, vehicle, freight, train and container versions.
- ❖ ROI difference method and threat matrix allows NORM discrimination with PVT.
- ❖ NaI(Tl) provides ability to identify medical, industrial, SNM and NORM radionuclides.



- ❖ **Contamination Monitoring in Industrial Environments**
- ❖ Asset protection
- ❖ Automated unmanned systems, notify personnel when alarms occur.
- ❖ Remote monitoring and diagnostics
- ❖ Modular components for reduced maintenance





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# Pedestrian Contamination System

- ❖ Patented method of detecting the location of a radioactive source.
- ❖ Permits free flowing traffic.
- ❖ Gamma and neutron detection with high sensitivity.
- ❖ Triggers camera images during alarms.
- ❖ Very low false alarm rate.
- ❖ Spectroscopy option.
- ❖ Local and remote alarms.
- ❖ Database storage of data.



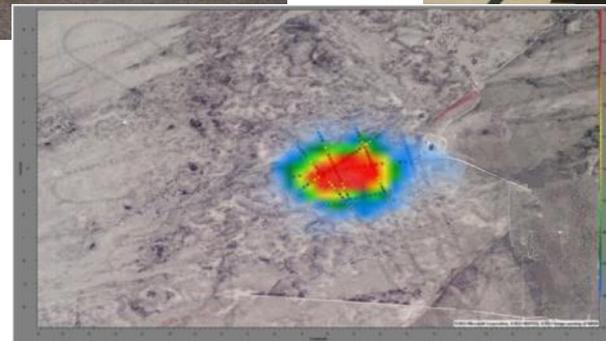




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# Land-based Mobile Systems

- ❖ Rapid deployment
- ❖ Large area coverage
  - ❖ Dose surveys
  - ❖ Radionuclide ID
- ❖ Fast setup
  - ❖ Easily moved
  - ❖ Pedestrian, vehicle monitoring
- ❖ Movable checkpoints
- ❖ Integrated GPS
- ❖ Real time and post mission analysis
- ❖ Bread crumb plotting display
- ❖ Contour Mapping display

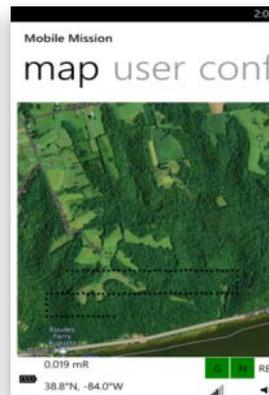
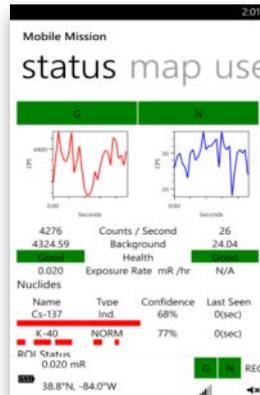
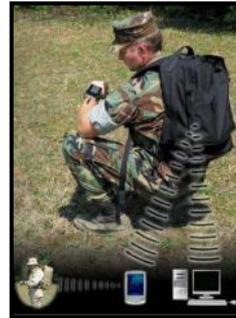




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# Man Portable and Handhelds

- ❖ Backpack, vest-overlay and custom configurations
- ❖ Optional neutron detector ( $^3\text{He}$  or  $^6\text{Li}$ )
- ❖ Large area gross gamma detection
- ❖ Gamma spectroscopy
- ❖ Voice, visual and vibration alarming
- ❖ High intensity color display, visible in direct sun light
- ❖ Easy push-button operation
- ❖ Data logging
- ❖ Wireless capable
- ❖ GPS / GIS
- ❖ Wireless ODI
- ❖ Rugged
- ❖ Light weight
- ❖ Long battery life (>15 hour life at -30C)



- ❖ Two Handheld Form Factors
- ❖ Survey instrument with handle
- ❖ Holstered device
- ❖ NaI or LaBr3 gamma detectors

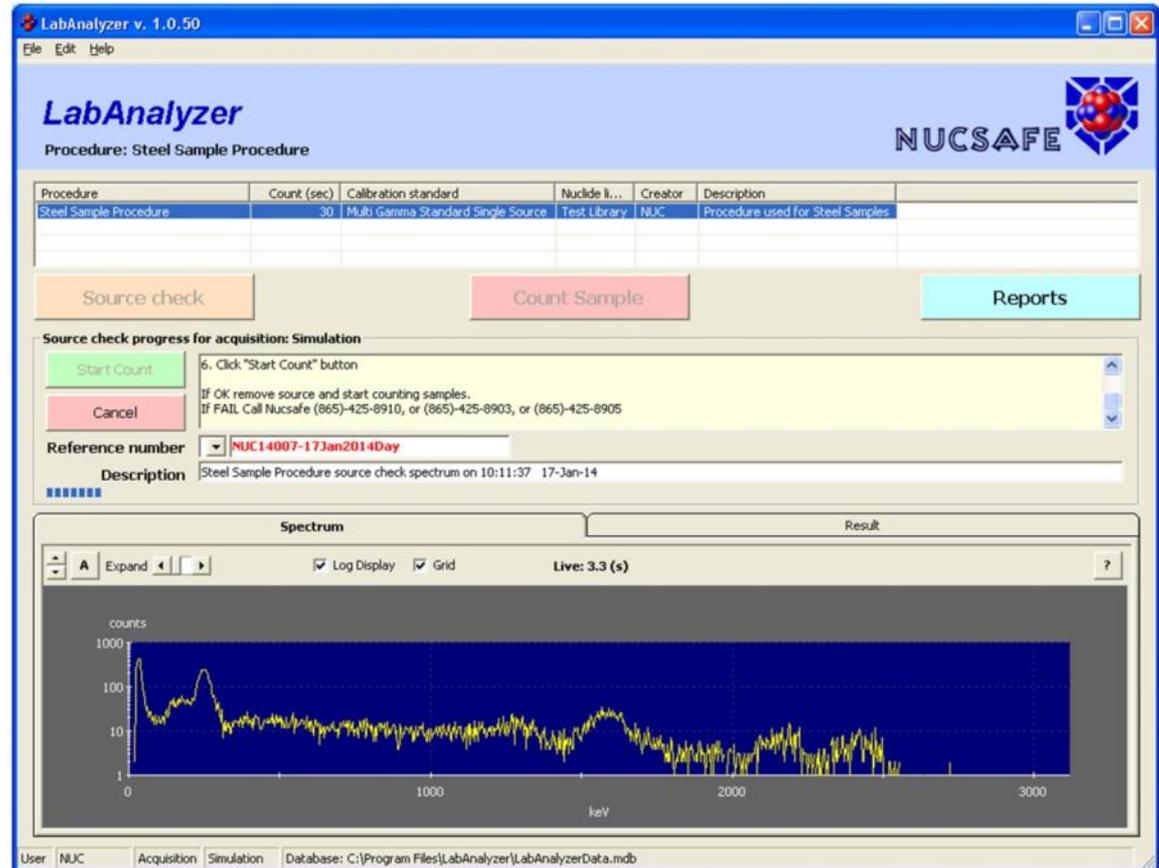




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# Laboratory Systems

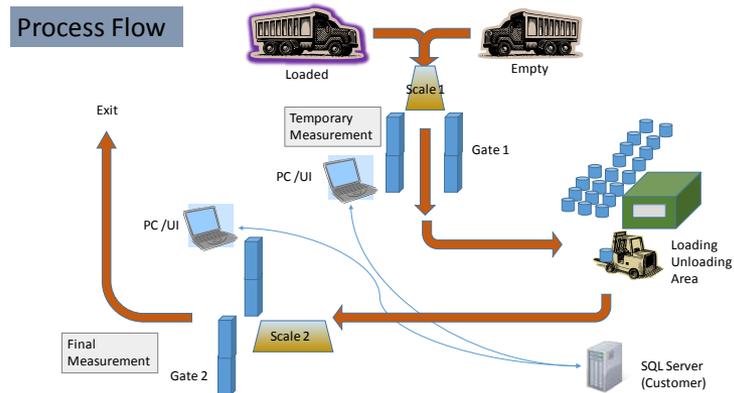
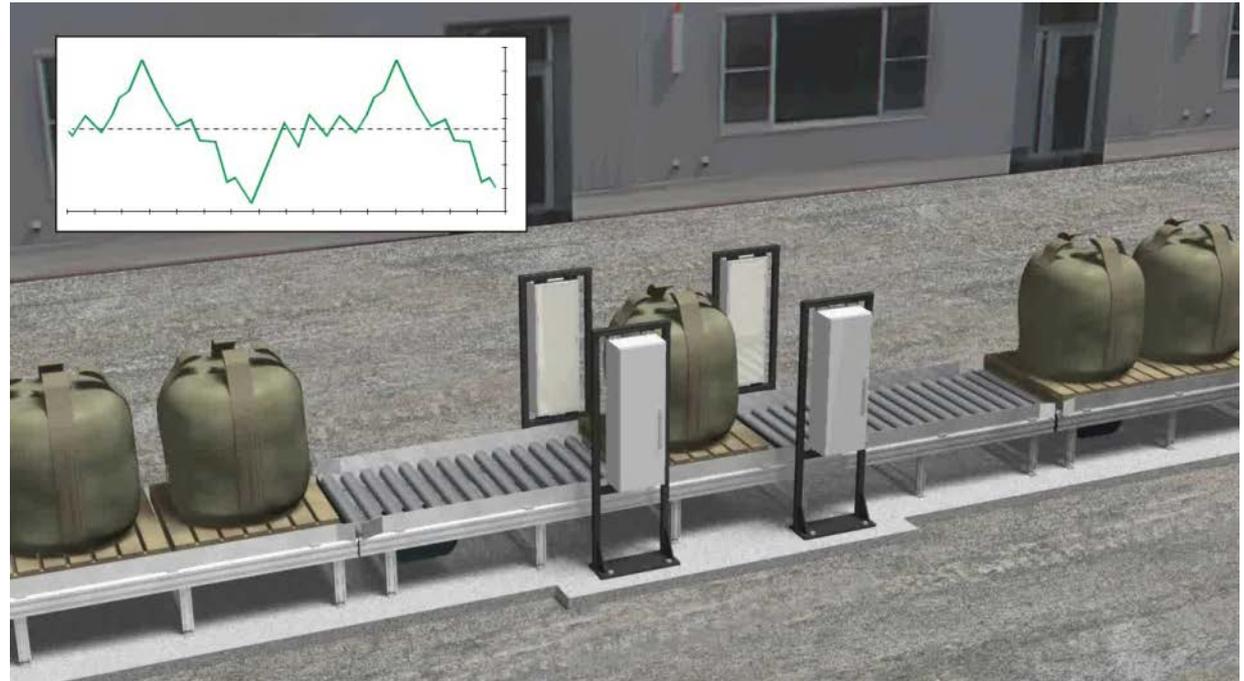
- Food Monitoring
- Waste Monitoring
- Radionuclide ID
- Quantitative Analysis
- Quality Assurance





# Conveyor Waste System

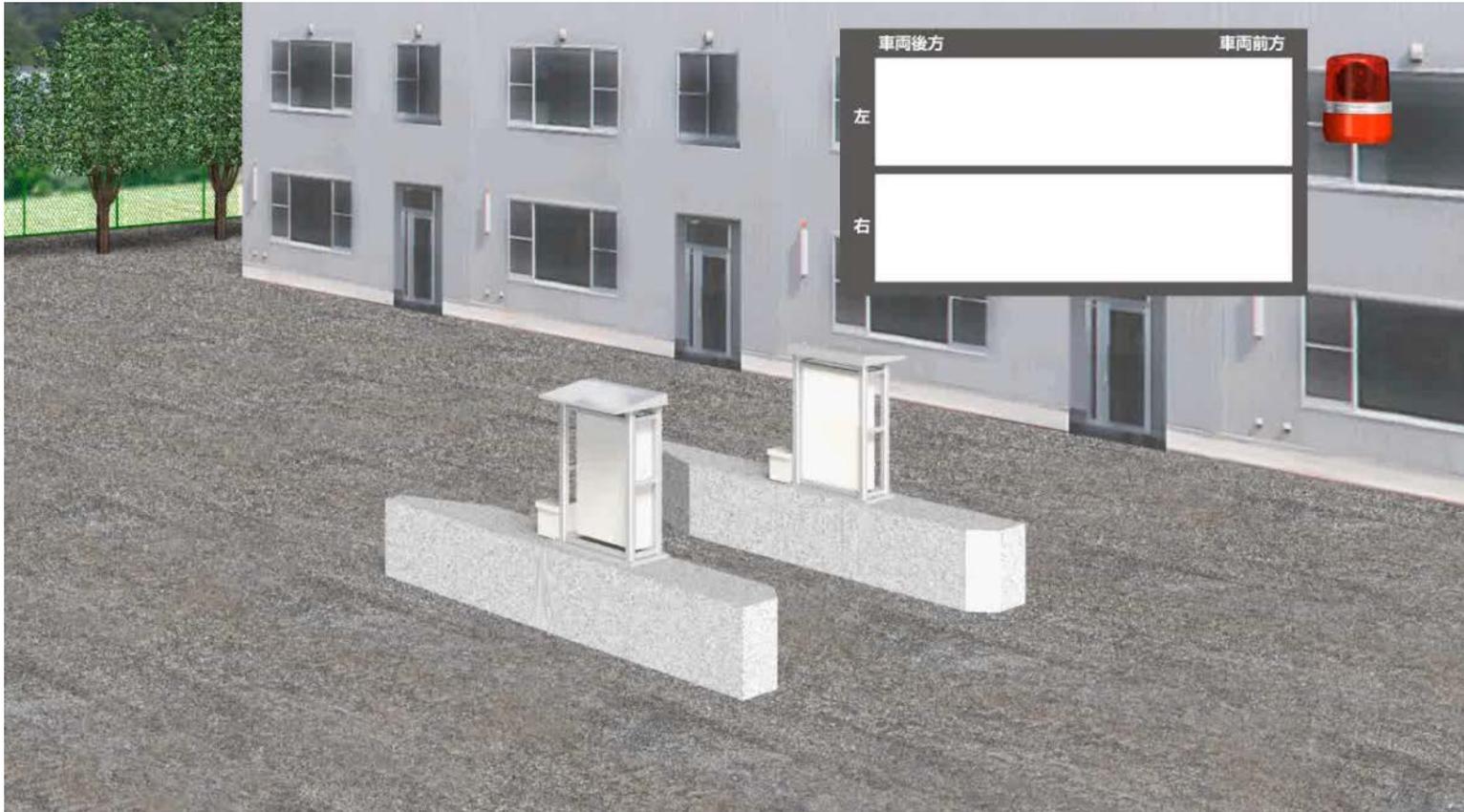
- Ability to identify contamination in individual super sacks.
- Sorting by specific activity.
- System tests completed.
- Ready for deployment.





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# Waste Portal Monitor



- ❖ Can identify if all bags or specific bags have high activity.

# X-Ray Backscatter Division

- Single-sided imaging
- Industrial proven technology
- Patented radiography by selective detection
  - Improved subsurface resolution
  - Improved subsurface contrast
  - Depth information
  - Flaw detection
  - Cracks and voids
  - Delaminating
  - Corrosion
  - Deposits
  - Adhesive thickness
- Ideal for imaging
  - composite
  - low Z materials
  - water detection
- Foreign object detection
- Security applications



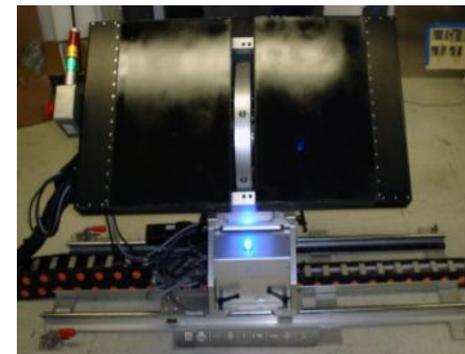
Space Shuttle External Fuel Tank Inspection



Corrosion Images



Robotic 225kV system imaging Orion heat shield



100kV transportable system



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# Ultra Electronics Nuclear Control Systems

## Strengths

- ❖ 200+ staff dedicated to nuclear
  - ❖ high integrity analogue/digital electronics software design
  - ❖ radiation physics team
  - ❖ mechanical design team
  - ❖ obsolescence management team
  - ❖ nuclear qualified manufacturing
  - ❖ service and support team
- ❖ Deep understanding of nuclear safety and radiation detection
- ❖ Nuclear compliant quality systems



making a difference



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# Ultra Electronics Nuclear Control Systems

Expertise/Focus

## ❖ Nuclear Sensors & Radiation Monitoring

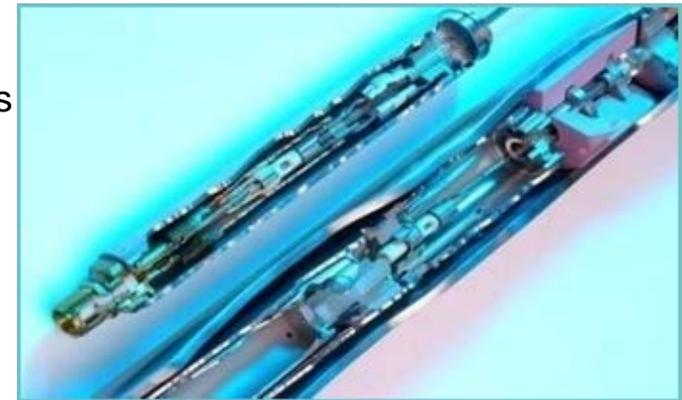
- military radiation detection systems
- area radiation monitoring and secure networks
- emergency management systems

## ❖ Nuclear Plant Protection Systems

- high integrity voting and trip systems
- diverse safety system design & qualification
- through life support including A&O management

## ❖ Neutron Flux Detection & Nucleonics

- reactor protection instruments in-core monitoring systems
- nucleonics including
  - pulse counting, Campbell processing, log dc and linear dc
- MI and super-screened cables and connectors
- health physics





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# ULTRA ELECTRONICS Products



Continuous Air Monitor (CAM)  
Measurement of alpha and/or beta  
particulate



CMS Gamma, an advance continuous  
gamma radiation monitoring station



ANV S2 FV Radiation  
Monitoring System for  
Vehicles



ANV S2 FV Radiation  
Monitoring System for Ships



Nuclear Emergency Warning  
System (N.E.W.S.). WEB based  
real time boundary radiation  
monitor platform



Area Gamma Monitor with  
GSM and GPS functionality



making a difference